# GARDEN AND FOREST.

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## Formal Gardening: Does it Conflict with the Natural Style.

IT is not credible that the art which brings men into closest contact with Nature's kindness and serenity can tend to make them narrow and unjust; and therefore it is strange that so much narrowness and injustice should be revealed in treatises on gardening. In elder days very few writers who advocated either the formal or the naturalistic style of gardening could see any merit in the opposite style; and the same temper is often manifested in our days. Too many recent books, which otherwise would be useful, are rendered dangerous by the bitterness with which the words and works, the ideals and processes of the opposite camp are attacked. This is unfortunate, for the judgment and taste of a novice may easily be warped forever by the first books he may chance to take in hand; and one must read a good many books on gardening-art, and check off their contradictory statements one against the other, using, meanwhile, one's own eyes out-of-doors, to arrive at the right understanding of what they teach. This understanding shows us that each system of design is right in its own place, and that the advocates of each have not always dealt fairly with the advocates of the other, or, at least, with the system which did not chance to be their own. Occasionally we do find a wise and temperate writer who puts the fact of the essential value of both styles of gardening into brief, plain words. Mr. Walter Howe, for example, in the charming introduction to his little book called "The Garden in Polite Literature," tells us that "the mistake should not be made by the adherents of one school of art, of utterly condemning the other. There are elements of truth in the ideas of both schools which intelligent amateurs and professional men should cherish and utilize whenever and wherever circumstances will permit." And Monsieur Edouard André, the foremost professor of landscape-art in France, goes still further in his *Art des Jardins*, and very instructively says, "Three styles may be recognized: The geometrical style, the landscape style, and the composite style. . . . The mixed or composite style results from a judicious mingling of the other two, under favorable conditions; and, to my mind, it is to this style that the future of gardening-art belongs."

In truth, if we use our own minds and eyes, there is no reason to think that formal gardening and landscape-gardening are deadly rivals, each of which must put the knife to the other's throat if it wishes itself to survive. There is no real opposition between the two systems, although they seem very far apart when their most extreme results are compared.

"Natural gardening" is a term which is often used, but it is so inexact that it may well move to contumely any advocate of the formal styles. No gardening result is natural. At the most it is only naturalistic. "True, behind all the contents of the place sits primal Nature, but Nature 'to advantage dressed,' Nature in a rich disguise, Nature delicately humored, stamped with new qualities, furnished with a new momentum, led to new conclusions by man's skill in selection and artistic concentration. . . . Man has taken the several things and transformed them; and in the process they passed, as it were, through the crucible of his mind to reappear in daintier guise; in the process, the face of Nature became, so to speak, humanized; man's artistry conveyed an added charm. . . . A garden is man's transcript of the woodland world; it is common vegetation ennobled; outdoor scenery neatly writ in man's small-hand. It is a sort of twin-picture, conceived of man in the studio of his brain, painted upon Nature's canvas with the aid of her materials. . . . It is Nature's rustic language made fluent and intelligible, Nature's garrulous prose tersely recast—changed into imaginative shapes, touched to finer issues."

These are the late James Sedding's words, written by an architect and printed in a book the purpose of which is to exalt formal gardening-art and to decry the "so-called landscape-gardener" as a person who is not an artist at all but a helpless meddler with Nature, professing to do work exactly like Nature's, and, of course, always failing in the attempt. But this book is one of those which most grievously misrepresent the true ideals, methods and results of landscape-gardening, however faithful may be its pictures of what the actual professors of the art to-day achieve in England. And we are glad to emphasize the fact by quoting this one passage and saying that it is an admirable description of genuine landscape arrangements, and essentially inappropriate to definitely formal arrangements.

In a true formal garden the canvas is not Nature's and does not profess to be, while in the naturalistic garden it may be Nature's, and, if not, must look as though it might have been. In a formal garden the language is not a refinement of Nature's, but a translation of it into quite another tongue. In a formal garden Nature is not delicately humored, but is boldly compelled in a direction opposite to any of those which she ever chooses for herself. A formal garden is not man's transcript of the woodland world, but a wholly new conception based on architectural knowledge and elaborated by architectural taste. It is as artificial, almost, as a building; for, although its materials are Nature's, so are the stones of a cathedral; and Nature shows us nothing which at all resembles it, either in fundamental idea or in finished effect.

On the other hand, Mr. Sedding has exactly and beautifully painted such scenes as we may find, for instance, in some parts of Central Park. They are not natural scenes, but they are naturalistic, in effect as well as in idea. Suggestions and hints for them may be found in wild Nature, although no exact patterns or prototypes. They speak to the mind in Nature's language, although more clearly and exquisitely than she ever speaks herself. No study of architecture could have taught a man how to conceive them, and no degree of architectural taste could have enabled him to perfect them. Nature was our great artist's school-master, and not merely the store-keeper from whom

he bought his materials, to be treated after methods of his own inventing. If nothing similar existed in England, nothing to show Mr. Sedding a true original for his charming verbal picture, the fault did not lie, as he thought, at the door of landscape-gardening; it must be laid to the fact that no real artist had practiced landscape-gardening in the regions which he knew.

It is important thus to realize that no garden or park or landscape picture can be treated in a "natural way"—that the work whose result comes nearest to Nature's cannot be more than naturalistic work; for this realization will, in the first place, teach us to apply a right standard when we judge works of naturalistic kinds, and, in the second place, will remove the prejudice which most Americans have against formal styles of gardening. When we feel that all gardening which is artistic must, to some extent, be artificial, we shall feel that the measure of artificiality may now be greater and now less, and that, under certain conditions, a very strictly architectural, geometrical scheme may be the best that we could possibly employ. This lesson needs to be taught, and there is small danger that it will harm us in any way. Our Teutonic blood predisposes us to a more spontaneous and general love for Nature than for art, and thus to an instinctive preference for naturalistic rather than architectonic ideals in gardening. We are not likely ever to become so enamored of formal gardening that we shall turn to it in cases where landscape-gardening would serve us better; the danger lies in the opposite direction. Moreover, a true appreciation of the charms of formality would profit our landscape-work itself. Giving us a clearer insight into the true character of each artistic ideal, it would help us to use formal elements well when they are needed in a naturalistic scheme, and to dispense with them altogether when they are needless and, therefore, inharmonious and inartistic.

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At the very close of his administration, President Harrison established by proclamation a number of forest-reservations in the west. The Yosemite National Park has been enlarged in this way by over 4,000,000 acres, or by more than 6,000 square miles, the new territory lying south of and adjoining the present park, and containing that portion of the Sierra Nevada Mountains which is considered by many observers to contain the grandest scenery in the United States. Within it is the highest land in the United States outside of Alaska, and it includes the wonderful King's River Cañon and considerable forests of Sequoia, immense bodies of Sugar Pine, Libocedrus and other valuable trees, and the sources of the San Jaquin River.

Three other reservations in California and Washington, comprising 2,500,000 acres, and a fourth in the Grand Cañon of the Colorado, of nearly 2,000,000 acres, have also been established. Mr. Harrison and Mr. Noble, his Secretary of the Interior, have by these wise measures conferred a benefit upon the nation of an importance that it is difficult to estimate. Something, however, in this connection is left to their successors, for it must not be forgotten that these reservations are only reservations on paper, and that designing men will continue to plunder them; that fires will continue to rage through them, and sheep and other grazing animals will continue to threaten their existence until proper means are adopted for their care and protection.

The government is still without adequate machinery for protecting its forest-property, and although a great step forward has been taken in the direction of forest-preservation and the proper use of the national domain, the situation will remain critical until some system is devised by which these forests can be managed for the benefit of the nation, and by which they can be made not only self-supporting, but capable of yielding a revenue to the government. Few questions of public policy require more immediate attention at the hands of the present administration than the care of these great forest-reserves, which, if properly managed, will perpetuate the name of the late Secretary of the Interior and place it on the rôle of the wise, far-seeing and useful statesmen of this country.

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## Making Maple-sugar: The Old Way and the New.—I.

As a practical worker in the sugar-orchard, my memory carries me back sixty years, when the methods and operations in this industry were very primitive as compared with those of the present time. The changes I speak of have all taken place between my own boyhood and old age. The making of maple-sugar by the Indians four hundred years ago was a much cruder process than our own one hundred years ago.

At the age of twelve years I followed my father from tree to tree and set the troughs to catch the sap after he had tapped the trees. His method of tapping was to strike two blows with a sharp axe so as to take out a chip, leaving the wound clean, which was then called "boxing." The cuts of the axe were made diagonally across the tree so that the lower faces of the gash met in a point and led the sap into the spout. About an inch and a half below the wound an iron instrument was driven into the tree to receive the spout. This instrument was called the tapping iron, and it was eight or ten inches long, with the lower end flattened and curved and brought to an edge. Spouts were made to fit this instrument and driven home. Troughs in which to catch the sap were made by cutting Basswood-trees into logs two feet long, then splitting the logs once through the middle and digging out the flat side. At the close of the sap season these troughs were turned bottom-side up and left in the woods until the next season.

The first boiling apparatus I remember was a potash-kettle, hung on one end of a long pole with weights attached to the other end and the whole balanced on a post so that the kettle could be swung on or off the fire as needed. The sap was gathered with pails and a sap-yoke balanced on the shoulder. In those early days no tubs were used for storing the sap, which was gathered as fast as the kettle would receive it. Large green logs were rolled one on each side of the kettle. Green wood only was used in boiling, for it was cut as it was wanted.

No sugar-house or shed of any kind was ever thought of. The open firmament was our only shelter; storms of snow, rain and wind beat on us as mercilessly as it did upon the trees around us. The gathering of sap otherwise than by hand was unknown. The fire was kindled under the kettle with Birch-bark peeled from standing trees and tucked in between the kettle and logs. Cinders, smoke, steam and occasionally a brand of wood would fall into the boiling sap to discolor the product.

In those days we boiled the same sap from morning till night by constantly replenishing the kettle, thus wasting time and fuel and sacrificing quality, and at night we "syruped down" to a density of about ten pounds to the gallon. This was then taken home and reduced to tub-sugar. Syrup was not made for sale, and therefore it was taken from the fire before the malic acid and lime of the sap combined to form what the chemists call malate of lime, or, as it is popularly called, "nitre."

This sediment that so troubles sugar-makers now is the ash of the sap, and it was in the sap then, no doubt, as it is now, but it was not precipitated to give trouble as it now does.

After the potash-kettle, in my experience, came smaller kettles, the chaldron, holding from three to five pails, swung on a pole supported by two crotched posts. Next came the sheet-iron pans set on stone fire-places, built up in the woods with no flue or chimney. After this came sugar-houses, with regular arches built for the pans, with chimneys; this was a great advance. In process of time evaporators were invented, which was a still longer stride forward.

After the axe, in tapping, came the auger; a two-inch hole was bored by some and an inch-hole by more. After this bits were mainly used, first a three-quarter-inch size and then a half-inch size, which many use still, although the more advanced and intelligent sugar-maker uses only the three-eighth-inch bit. We now have vats or store-tubs in which to keep the sap, and drawing-tubs and teams to transport the sap in bulk to the place of storage.

Sap should never come in contact with wood, therefore store-tubs and drawing-tubs should be lined with metal; the sap-tubs also should be of metal; tin is good in some respects, but objectionable in others. It renders the sap warm, which is a serious fault, as the cooler the sap is kept the better the product in color and flavor. If tin is used for tubs they should be painted white inside and out, so that the heat of the sun

will be reflected. The spouts, too, should be of metal. The best tub now made is of the best iron dipped in a solution of white metal, which renders it rust-proof and a non-conductor of heat. Tubs made of wood, if thoroughly painted and kept painted, will be very good and serviceable. Every sap-tub should have a cover easily and quickly adjusted to the tree above the tub, and disconnected with it, but so set as to exclude snow or rain, falling bark, floating leaves and other impurities. The best covers that I have seen are made in Stowe, Vermont, of wood, painted white.

Waterbury Centre, Vt. *Timothy Wheeler.*

## Phosphate for Fruit.

DR. G. C. CALDWELL, of Cornell University, read a paper before the Western New York Horticultural Society on the fertilizer known as Basic Slag Phosphate, Thomas Slag Phosphate, as well as by other names. This is made from the slag produced by a process for making Bessemer steel from ore so rich in phosphorus that they are unfit for steel made by the usual process. Nearly all the iron ores of the southern states are of this character, so that the prospect is that great quantities of this ore will be utilized. About all the phosphorus of the ore goes into the slag, and when the product is ground very fine it may contain as much as twenty per cent. of phosphoric acid. In 1880, fifteen thousand tons of this phosphate were used as a fertilizer in Europe, and ten years later 783,000 tons were used, an increase which speaks strongly for its usefulness.

In comparing the different forms of phosphates, it is probable that the trade value of a pound of phosphoric acid in this slag will not differ much from that of the so-called reverted phosphate. The solubility of the phosphate in slag differs so little from that of the reverted phosphate that there will be little reason for any difference in this respect. As there will probably be a great demand for it, methods of adulteration are already sought. As it comes from the furnace it is not all equally good, so that the best can be easily mixed with ground rock phosphate, which is very inferior to it in value. When it comes on the market, therefore, it ought to be subjected to the scrutiny of the agents of the experiment stations. Experiments in Germany seem to show that this phosphate is especially useful on bog lands and on irrigated meadows, or on such as are periodically overflowed. On dry lands, or in dry seasons, it is apt to fail, although its effect may appear in the following year, so that there will be no loss. It has been tried with success on every crop that is usually benefited by phosphoric acid, and two hundred pounds of slag-flour, ground very fine, has given as good results as one hundred pounds of superphosphate. The European chemists consider it one of the best materials to use for the purpose of stocking the soil with a desirable surplus of phosphate of a suitable degree of assimilability.

After giving a very complete account of the experience with this slag in Europe, and assuming that the product which is beginning to come into the market in this country is about of the same quality, Dr. Caldwell continued:

Now as to the use the horticulturist can make of this fertilizer, I have nothing but suggestions to offer. For most of the crops that he raises, it would seem to me that he requires a fertilizer that acts slowly; his berry-bushes, his vines and his trees grow slowly, as compared with the crops that the farmer raises, and especially compared with those of the market gardener. For him a fertilizer that comes somewhat slowly to an assimilable condition is at least just as good as one that is all or mostly soluble, and assimilable when he applies it; and if the first is cheaper than the second, while supplying, for the money invested in it, a larger amount of the valuable constituent for which it is bought, than he can get in the second, it is the best manure for him to get. In the papers that I have read, or the talks that I have given here or at farmers' institutes, on commercial fertilizers, I have advised my hearers to give up such exclusive use of the ordinary superphosphate as is commonly practiced, and to experiment on their soil with their own mixtures of the three plant-foods, phosphate, potash and nitrogen compounds, for the reason that the ordinary superphosphates contain all three of these substances; that the cost of the fertilizer is based on the quantity of each of them that it contains; that it may often be the case that a particular soil or crop to which this complete fertilizer is applied, does not require some one or another of these foods, and if so, will not yield in return, and that, therefore, all the money paid for the hundred pounds, or two hundred pounds, or more in each ton of the fertilizer bought, may be entirely thrown away for the time being. This slag phosphate is a good material with which to begin to carry out this idea. It contains no other plant-food than phosphate, and that exists in it in a very useful form; it is very probable that in many cases it would do its best work not alone, but either with nitrogen compounds, or potash, especially ashes, or both. With a little patience in putting the question two or three times to his soils or to some special crops, by experiments in the field, any farmer or horticulturist can get satisfactory answers to his questioning, and learn how to feed his crops, less like a mere machine, and more like an intelligent reasoning man.

## Notes on the Forest Flora of Japan.—VIII.

JAPAN and eastern North America are equally rich in species of Holly, there being thirteen or fourteen in each of the two regions. In Japan, however, Hollies grow to a larger size than they do in North America, there being eight or nine trees in this genus in the Mikado's empire, and only four in the United States; and some of the Japanese Hollies are much larger and far more beautiful than any of our species. The most beautiful of them all is certainly the southern Ilex latifolia, an evergreen tree now occasionally seen in the gardens of southern Europe, where it was first carried more than fifty years ago. Although a native of southern Japan, Ilex latifolia appears perfectly at home in Tōkyō, where it is often seen in large gardens and temple-grounds, and where it occasionally makes a tree fifty to sixty feet in height, with a straight tall trunk covered with the pale smooth bark which is found on those of most plants of this genus. The leaves are sometimes six inches long and three or four inches broad, and are very thick, dark green, and exceedingly lustrous. The large scarlet fruit of this tree, which does not ripen until the late autumn or early winter months, and which is produced in the greatest profusion in nearly sessile axillary clusters, remains on the branches until the beginning of the following summer. Ilex latifolia is probably the handsomest broad-leaved evergreen tree that grows in the forests of Japan, not only on account of its brilliant abundant fruit, but also on account of the size and character of its foliage. It may be expected to prove hardy in Washington, and will certainly flourish in the southern Atlantic and Gulf states.

Ilex integra is also a beautiful and distinctly desirable ornamental tree, often cultivated in the temple-gardens of Japan, where it frequently reaches a height of thirty or forty feet. The leaves are narrow, obovate, three or four inches long, and apparently quite entire. The fruit, which is rather long-stalked, is nearly half an inch in diameter, and very showy during the winter. A variety of this species (var. leucoclada, Maxm.), a shrub two to three feet high, with narrower leaves and smaller fruit, is a northern form, growing as far north as southern Yezo. On Mount Hakoda, near Aomori, we found this plant in full flower and with ripe fruit on the 2d of October, and secured a supply of the seeds, so that its hardiness can be tested in the northern states. It must be remembered, however, that, although this plant, and several other broad-leaved evergreen shrubs, including two or three species of Holly, grow in Japan in a higher latitude than Massachusetts, they are protected, as Maximowicz has already pointed out, during the winter by an undisturbed covering of snow, and are not exposed, therefore, to the changes of climate which endanger the existence of many plants in eastern America. In Japan, moreover, plants do not suffer from the summer and winter droughts, which often sap their vitality in the United States, and which are often more directly responsible for the apparent want of hardiness of many plants than intense winter cold.

A third Japanese evergreen species, Ilex rotunda, is also occasionally cultivated by the Japanese, although I only saw two or three specimens of it; these were handsome trees, thirty to forty feet in height, with well-formed trunks twelve to thirteen inches in diameter. The leaves of this tree are broadly ovate to nearly orbicular, with entire thickened margins, and are very dark green and lustrous, although not thick nor very coriaceous. The fruit is smaller than that of the two species already mentioned and rather oblong in outline.

A very distinct evergreen species, Ilex pedunculosa, is exceedingly common on the Nagasendo, the great central mountain road of Japan, in the valley of the Kisogawa. This plant is sometimes a shrub two or three feet in height, and is sometimes twenty or thirty feet high, when it is a well-formed tree, with a narrow, round-topped head. The leaves are lustrous, two to three inches long, ovate-acute, entire and long-petiolate. The stems of the flower-clusters, from which is derived its specific name and which are longer than the leaves, give this plant its greatest charm, for they hold the large bright red fruit, which is solitary, or arranged in clusters of three or four, well outside the leaves, giving to the plants a peculiar and beautiful appearance in the autumn. Occasionally a tree of this species was seen in the garden of an inn on the Nagasendo, but it is evidently little known or cultivated in Japan, and apparently has not been introduced into western gardens. Ilex pedunculosa will certainly flourish in western and southern Europe, and I am not without hope that it will survive and possibly thrive in the northern United States, as in Japan it is found at high elevations in a region of excessive winter cold.

Ilex crenata is the most widely distributed and the most abundant of the Japanese Hollies with persistent leaves; this plant is abundant in Hokkaido, on the foothills of Mount Hakkoda, and on the sandy barrens near Giffu, on the Tokaido; and I encountered it in nearly every part of the empire which I visited. It is usually a low, much-branched rigid shrub, three or four feet high, but in cultivation it not infrequently rises to the height of twenty feet and assumes the habit of a tree not unlike the Box in general appearance. The leaves, which are light green and very lustrous, vary considerably in size and shape, although they are rarely more than an inch long and are usually ovate-acute, with slightly crenate-toothed margins. The black fruit is produced in great profusion and in the autumn adds materially to the beauty of the plant. This is the most popular of all the Hollies with the Japanese, and a plant usually cut into a fantastic shape is found in nearly every garden. Varieties with variegated leaves are common and apparently much esteemed. Ilex crenata and several of its varieties, with variegated foliage, were introduced into western gardens many years ago and are occasionally cultivated, although the value of this plant as an under-shrub appears to be hardly known or appreciated outside of Japan. Of the broad-leaved Japanese evergreens I have the most hope of success with Ilex crenata in this climate; and if it proves really hardy it will be a most useful addition to our shrubberies.

Ilex Suderoki, another evergreen species quite unknown, I believe, in gardens, may be expected to thrive in Europe, and possibly in the northern United States, as it is an inhabitant of southern Yezo and northern Hondo, where on Mount Hakkoda we found it in fruit, and were able to secure a supply of the seeds. It is a spreading bush five or six feet high, with stout branchlets, light green ovate leaves an inch long, rounded at the apex and coarsely crenulate-toothed above the middle, and with bright scarlet long-stalked solitary fruit half an inch in diameter. Ilex Suderoki is an unusually handsome plant in the autumn and of considerable horticultural promise.

Of the section of the genus with deciduous leaves (Prinos), represented in eastern North America by the familiar Black Alder (Ilex verticillata) of our northern swamps and by the arborescent Ilex Monticola of the Alleghany Mountains, there are several species in Japan. The largest of these, Ilex macropoda, is widely distributed, but not a common plant. I saw it on the cliffs at Mororan on the shores of Volcano Bay, on the hills above Nikko, and on the flanks of Mount Koma-Ga-Take in central Japan, although only a single plant in each of these widely separated localities. Ilex macropoda is a round-headed tree, twenty to thirty feet in height, with a trunk sometimes a foot in diameter. It is a well-shaped handsome tree, with stout branchlets furnished with short lateral spurs and ample, membranaceous, ovate-acute, long-petioled leaves conspicuously reticulate-veined, which turn bright clear yellow in the autumn, when they make a beautiful contrast with the bright red long-stalked fruit, which, although not very large, is exceedingly abundant. Ilex macropoda grows not only far north, as Professor Miyabe has recently written me of its discovery in the neighborhood of Sapparo, but in the most exposed situations and at high elevations; and there is no reason, therefore, why it should not thrive in our northern states, where it may be expected to add considerably to the beauty of shrubberies in the autumn and early winter.

A much more common plant than Ilex macropoda is Ilex Sieboldii, although this species does not reach Hokkaido or ascend to high elevations on the mountains of Hondo. It much resembles our North American Ilex verticillata and Ilex lævigata, although much less beautiful than either of these species, the fruit being smaller and less highly colored. Ilex Sieboldii is a tall-spreading shrub, very common in low grounds and near the borders of streams, with slender stems often twelve or fifteen feet tall, small ovate-acute sharply serrate conspicuously veined leaves, and small scarlet fruit clustered on the short lateral spur-like branchlets. In the autumn the leafless branches of this shrub covered with fruit are sold in immense quantities in the streets of Tōkyō for the decoration of dwelling-houses, for which purpose they are admirably suited, as the berries remain on the branches and retain their color for a long time. Ilex Sieboldii was introduced many years ago into American gardens by the late Thomas Hogg; it is an old inhabitant of the Arnold Arboretum, where it now flowers and produces its fruit every year. As an ornamental plant, however, it is less desirable than the related American species, and it will probably only be cultivated in this country or in Europe as a curiosity, or in botanic gardens.

The other Japanese Hollies with deciduous leaves, Ilex serrata, which is closely related to and resembles Ilex Sieboldii, and Ilex geniculata, a rare shrub of the high mountains, with black fruit, I was not fortunate enough to find.

*C. S. S.*

## Foreign Correspondence.

### London Letter.

Musas.—Three species of Musas, of special value as decorative plants, are now flowering in the Palm-house at Kew, M. rosacea, M. coccinea and M. Mannii. The first-named is an Indian species, with stems from four to eight feet high, leaves of the usual form, but narrower than those of the common Banana, and an erect flower-spike which projects a foot or more above the base of the topmost leaf and is clothed with yellow tubular flowers which are hidden under the large ovate concave rosy lilac bracts. M. coccinea, from China and Java, is less than three feet in height, with beautiful dark green leaves a yard long, and an erect spike with large cardinal-red bracts. M. Mannii is a recent discovery in Assam and has been named in compliment to Mr. Gustav Mann by Wendland. It is similar to the last-named species, but the bracts are a darker shade of red and the leaves are coarser. These are beautiful stove-plants, easily cultivated, and, besides the charm of their foliage, they add bright color to a collection at a time of year when this is most acceptable. They appear to flower at almost any season.

Anthurium Chamberlainii is a plant of some beauty, both of foliage and inflorescence. It was named, five years ago, by Dr. Masters, in compliment to the Right Hon. J. Chamberlain, M.P., in whose garden, at Birmingham, it first flowered, and where it had been introduced by chance on a plant of Cattleya Gaskelliana. Until recently the Birmingham specimen was the only one, but last year a sucker of this plant was presented to Kew by Mr. Chamberlain, who takes considerable interest in the Royal collection, and this plant is now in flower. It has leaf-stalks four feet long, with large cordate shining green blades three feet long and two feet wide, with an unusually broad

basal sinus. The flowers are borne on stalks a foot long, the broad concave boat-shaped spathe is six inches long, the spadix is as thick as a man's finger and the color of the whole is coppery red. In the large genus Anthurium, of which over a hundred species are in cultivation at Kew, there are only very few with showy flowers, A. Andreanum, A. Scherzerianum and A. ornatum being quite exceptional in the size and color of their inflorescences. A. Chamberlainii may, however, take rank with them as a large and handsome flowered species. Of course, we have also a considerable number of garden-hybrids with large flowers, and which have been raised from this trio, or one or other of them, crossed with some outsider.

CYMBIDIUM GRANDIFLORUM.—The specimen of this rare Orchid, mentioned in my letter last week as having been shown in flower at the meeting of the Royal Horticultural Society, was sold by auction last Friday. It realized fifty-four guineas, the purchasers being Messrs. J. Veitch & Sons. This is suggestive to collectors residing in the eastern Himalaya, where this species is a native.

PHAJUS TUBERCULOSUS is a most beautiful Orchid, but it does not thrive under cultivation, as a rule. It was introduced in quantity from Madagascar about twelve years ago by Messrs. F. Sander & Co., and flowered for the first time in Sir Trevor Lawrence's garden in 1881. Its erect sturdy scape, bearing from six to ten flowers, each two inches across, with overlapping segments of the purest white, except the lip, which is crimson and gold, is a delight to all who see this flower. The late Mr. Spyers, who was Orchid-grower to Sir T. Lawrence, succeeded with this plant by growing it on a pad of moss against a piece of fibrous Fern-stem, watering it copiously, keeping it in a very warm

Fig. 20.—Begonia Souvenir de François Gaulin (reduced).—See page 125.

house and fumigating it once a fortnight by smoking his pipe near it, puffing the smoke under a bell-glass placed over the plant. There is a good example of P. tuberculosus in flower at Kew now, treated after Mr. Spyers' plan.

Galanthus Byzantinus is a new species of Snowdrop, which Mr. Baker has named from specimens sent to Kew by Mr. Allen, who makes a specialty of these plants. It is also in the collection of Messrs. T. S. Ware & Co., Tottenham. It has the look of an ordinary Snowdrop, but when examined with the scrutiny of a fancier of Snowdrops it shows peculiarities of its own. Mr. Baker places it intermediate between G. plicatus and G. Elwesii. Its leaves are glaucous, channeled, reflexed along the margins, a foot long, three-quarters of an inch wide. The flower-stalks are six inches long. The flowers have oblong-convex outer segments three-quarters of an inch long, and deeply emarginate inner segments, with a green horseshoe mark at the margin and a green blotch at the base. This description would fit fairly well half a dozen species of Snowdrops, so called, still when one sees the flowers together their differences are perceptible. In the "wild garden" at Kew there is now a wide stretch of Snowdrops in full bloom close to the colony of Christmas Roses which I wrote about a few weeks ago. They are common Snowdrops, but what a charm they have here under the tall trees, their white flowers, like snowflakes, lying thickly upon the brown leaves and green grass. The Daffodils will soon be open in their thousands close by, and on the other side in this wild garden, on the sloping turf, the yellow Crocuses are a cloth of gold. This is one of the easiest forms of gardening, and, at the same time, it is one of the most effective. G. Perryi is another new Snowdrop, described as "differing little from G. Alleni so far as general appearance goes, only the latter has larger flowers and is a purer white." Mr. Baker has also named a form of G. Elwesii, var. robustus, which has a large bulb and a thick glaucous leaf, the flowers scarcely as large as the type. It is said to be very hardy and a late-flowering kind. These three new kinds are cultivated by Messrs. Ware & Co., at Tottenham.

London. *W. Watson.*

## Paris Letter.

OUT-OF-DOORS horticulture in France has experienced in recent years one bad season after another. For the third year in succession we have a winter of American severity. The thermometer in Paris has lately marked thirty degrees of frost, Fahrenheit; and at Lyons fifty-one degrees, Fahrenheit, an almost unheard of occurrence, has been registered.

The supply of fresh flowers in the Central Market of Paris and at the innumerable florists' shops is consequently somewhat reduced by the severe weather, and flowers would be scarce had not the construction of glass-houses for the production of forced flowers been greatly increased in the last half-dozen years. Even on the Riviera, where the mildness of the climate is proverbial, acre upon acre of glass is put up every year, often on very slight and temporary structures, in order to aid the action of the sun and to prevent intense radiation during clear cold nights. All the best Roses grown on the Riviera are produced under glass, with the occasional help of hot-water pipes. The protection afforded by glass frames and the solar heat suffices, however, to bring on the buds in a state of immaculate beauty which no Roses can equal when grown out-of-doors.

It is owing to the largely increased number of glass-houses on the Riviera that a horticultural exhibition could be held at Cannes at the close of January, a most unusual time for a display of this sort. Highly interesting specimens of hybrid Aroids were staged, including several crosses of Anthurium Andreanum and A. Veitchii, all stately plants. Great masses of Chinese Primulas, Cinerarias, Pinks and Violets formed a striking contrast with the snow-capped hills and mountains in full view from the Exposition building.

A rare and, in some particulars, an exceedingly puzzling plant is shown every year in great beauty at these expositions at Cannes, namely, Lachenalia pendula, var. Aureliana, which was described and figured on page 396 of the *Revue Horticole* for 1890. According to a tradition held sacred on the spot, this plant was found wild not many years ago on the Esterel, some miles west of Cannes, near the line of the Via Aurelia, a great Roman highway into Provence.

At first sight it seemed preposterous that a plant belonging to a genus whose representatives are all natives of South Africa should be discovered growing wild in Europe at the end of the nineteenth century, after escaping the notice of botanists and country people for hundreds of years. This is made all the more incredible by the fact that the plant produces bright and showy flowers not at all likely to be passed by unnoticed. On the other hand, it cannot be denied that it is a very distinct form of Lachenalia, and if it must be referred to L. pendula, as the best botanists believe, it is at least a strongly marked variety. It differs from L. pendula in its stronger and more compact habit, in the broad green leaves and in the greater number of flowers, often amounting to forty or fifty on a spike, and in the fact that it blooms earlier. At Cannes, L. pendula flowers about the middle of January, while this variety is commonly in flower on or before Christmas, that is, a fortnight or three weeks earlier.

At this season the greatest quantity of flowers are sent from the Riviera to Paris. Roses, Pinks, Sweet Violets, the feathery Acacia dealbata, etc., and the flowers of many bulbous plants. The snow-white Roman Hyacinths are shipped by tons to northern cities, and the Paris florists have devised a new trick by which to tempt their customers. They color the spikes of flowers by immersing the stems in chemicals dissolved in water; in this way, at the end of a few hours, the whole inflorescence becomes evenly dyed from within. The favorite shades of color are a rosy lilac, salmon pink, and glaucous green, suggesting the color of the flowers of Ixia viridiflora. Bright crimson and golden yellow trusses of Lilac have been produced, and are the novelty of the week. It is claimed that the process makes the flowers last longer instead of shortening their power of duration. The coloring substances, extracted from coals, bear terribly long compound names. The same process was applied to Pinks last year with only indifferent effect, the petals being dyed unequally and showing patches of color on a white ground. With White Hyacinths and forced Lilacs the deception is quite complete.

At the Concours Général Agricole, which is the great agricultural fair held in Paris at the Palais de l'Industrie every winter, some space is usually devoted to ornamental and forced flowers. Although no heating department was provided last year, some of the leading houses volunteered to exhibit floral novelties. Vilmorin-Andrieux et Cie. showed improved forms of Cyclamen Persicum of immense size and great beauty, also very large seedlings of Primula obconica, and in large numbers the no less perpetual-flowering Primula Forbesii, a native of the Chinese province of Yun-nan. This plant is very pretty and extremely graceful, with slender airy floral stems which require support; they are a foot or a foot and a half tall, and bear on thread-like stalks four or five whorls of pretty flowers not unlike those of Primula farinosa in shape and color. The first plant originally raised from seed in 1890 bloomed in September of the same year, and has never been out of bloom since that time, ten to fifteen spikes being always in bloom together.

Chrysanthemums in flower are not a common sight in February, yet a good group of them were shown on the same occasion by Monsieur Boutreux, of Montreuil. The plants, of course, were not forced, but rather kept back. The best kinds among fifty or sixty varieties staged were: Fair Maid of Guernsey, Mademoiselle Marie Hoste, Pelican, Monsieur Parent, Louis Varay, Etoile de Lyon, Grandiflorum Alcazar, Yellow Dragon, Monsieur Boutreux, Dr.

Lacroix, George Maclure and President Harrison. The plants were all strong and well furnished with flowers, and, considering the lateness of the season, made a creditable display.

Paris. *H.*

## Cultural Department.

### Winter-flowering Begonias.

AMONG the numerous varieties of Begonias I have found the following to be the most desirable for winter flowering:

Begonia Souvenir de François Gaulin (Crozy), said to be a hybrid between B. olbia and B. rubra, is a winter-flowering plant of great beauty and value. Under ordinary cultivation it grows strongly, but not rankly, producing straight stems from the bottom, in the way of B. rubra. The leaves are long, of good substance, green above, with a satiny lustre, and deeply suffused with a vinous-red color on the edges, which are coarsely serrated, and on the reverse. There is often a slight suffusion of red on the upper surface of the leaf, which is very attractive. This Begonia blooms in clusters of about twenty flowers, which, individually, are probably the largest of any existing fibrous-rooted Begonia. The longest single flower on the spray, illustrated on page 123, is quite three inches long. The plants sometimes bear male flowers, but they are usually female, with large-winged ovaries, which, with the petals, are self-colored of a deep translucent carmine. The petals remain partly folded, and the flowers are not apt to become fertilized. They retain their beauty on the plants for several weeks, and are useful for cutting.

Begonia President Carnot is a hybrid of the same parentage as Begonia Souvenir de François Gaulin. It differs from this in the color of the flowers, which are lighter; there is also rather more suffusion of color in the leaves. B. Paul Bruant is quite the most free-flowering Begonia of the season, and, altogether, a beautiful plant with finely serrated leaves light green in color, and with numerous racemes of medium-sized flowers. These are light pink, with a trace of green on the ovaries. B. Gilsonii is an old and popular variety, the flowers a deeper pink, but not so numerous as those of B. Paul Bruant. It is one of the most robust and vigorous of Begonias, every leaf and stem in a damp place showing young buds. B. semperflorens gigantea, var. carnea and var. rosea, both have flowers in large racemes of various shades of red. The foliage is gross, and the plants are not specially desirable in small places, though valuable in large houses, where bold effects are desired.

There are three hybrids which should be in every collection for their beauty of foliage and flower. These are B. Gloire de Sceaux, B. Gloire de Jouy and B. Madame Hardy or Madame Lionet, the last two being similar. They are each distinct and make very handsome specimens. The first-named has smooth dark red leaves and large racemes of rose-pink flowers. B. Gloire de Jouy has oblique leaves deeply channeled and covered with silvery spots on a green hairy surface, with a metallic green lustre. B. Madame Hardy has leaves of a similar form, very dark maroon in color and resembling cut and figured velvet.

Of the smaller-flowered kinds, B. manicata, B. manicata aurea and B. hydrocotofolia are established favorites too well known to need description. They are three excellent house-plants. B. Saunderbruchii is a fine plant for a bracket and is especially effective against a rear light, which shows off the coloring of the leaves. These are large, deeply cut and pendent. From the creeping rhizome spring many long spikes with racemes of beautiful light pink flowers. There seemed to be a promise at one time that we should have a race of winter-flowering tuberous Begonias, similar in form to the popular summer-flowering kinds. A few of these have been produced, but do not seem likely to become popular or useful plants, as they do not bear seeds or submit readily to propagation. It is quite evident that we must depend on B. Socotrana for the most important advances in winter-flowering Begonias, these advances being in the lines of larger, more persistent or lasting flowers. B. Socotrana seems to be the link between the tuberous and fibrous-rooted Begonias, crossing equally well with either. It is a plant of much beauty, having large persistent flowers in winter. In the early year it forms small bulblets at the base of the stem and dies off.

The crosses already made with the fibrous-rooted kinds are of value. B. Gloire de Sceaux is, as already said, a fine plant. B. Bijou is less noticeable, with bright, small cherry-colored flowers. Monsieur Lemoine seems to have made the most progress in this line in B. Triomphe de Lemoine and B. Triomphe de Nancy, which are dwarf plants with hard stems and which bear a profusion of almost imperishable flowers. Individually, however, these flowers leave something to be desired, while the plants do not seem to be as easily grown as most Begonias. I grew them fairly well one season in the greenhouse, but last year, at the suggestion of Monsieur Lemoine, grew them in the open, with full exposure. Although this produced hard stems and good foliage, they have not flowered well, and I am inclined to think that a medium course of growing them outside, with partial shade, will secure the best results. The same growers claim an advance this season in the new B. Triomphe de Lorraine, with larger and very abundant flowers of the same texture as the varieties just named.

The cultural requirements of Begonias are usually of the simplest. They should be potted in small pots in rich open soil, and shifted along into larger sizes as required. After the plant has grown to the size desired, and when coming into flower, they are rather better for being pot-bound. At this stage regular applications of weak manure-water will be beneficial. They are particularly impatient of stagnant water at the roots, which will cause them quickly to drop their leaves. With plenty of pure air they are little subject to insect pests. Though Begonias are easily propagated, and are thus widely grown plants, a well-grown specimen is rare. Such specimens, showing the best possible results, always make a sensation, as in the case of B. Gloire de Sceaux in England lately, as related by Mr. Watson. B. rubra is a good plant for special culture in this direction. When well grown it makes straight bamboo-like canes, seven or eight feet long, with leathery foliage and an abundance of bright-colored flowers in large clusters. From indications I presume B. S. Pres. Gaulin could be grown into a specimen of the same character, possibly only inferior in size.

Elizabeth, N. J. *J. N. Gerard.*

### The Persian Cyclamen.—I.

CYCLAMEN PERSICUM is a common greenhouse plant, unfortunately rarely seen at its best in this country. A native of south-eastern Europe and various parts of Asia, it was first introduced to English gardens from the island of Cyprus, in 1731, but was much neglected until about half a century ago; since then it has steadily increased in popularity.

In its wild state the plant has handsomely variegated leaves, so conspicuous in the cultivated varieties. Many foliage-plants in our greenhouses are less ornamental. The wild flowers are comparatively small, white with a prominent blotch of purple at the base, and in some instances they are fragrant. The credit of the great improvement in its general habit and in the increase of size and development of colors in the flowers belongs to the market-gardeners and nurserymen about London. It is due to their unceasing efforts that we have plants of perfect habit, the flowers borne well above luxuriant foliage that is compact and sturdy. The colors of the flowers range, in selfs, from rich crimson to pure white, and in numerous kinds are beautifully blended and intermixed. The few varieties distinguished by the delicate odor of their flowers are commonly inferior in other respects. Fragrance would be a valuable trait in the best forms of the Cyclamen, and with persistence it is possible that a strain with handsome, scented flowers might be established. The work of the successful Cyclamen specialist in cross-fertilization, selection and seed-saving involves, of course, persistent and continued experiments.

There is, thus early in the cultivation of the Cyclamen in this country, a strong inclination to deteriorate in the offspring of plants obtained from European seed. Too often quantity is the main consideration of growers and degeneration is invariably the result. It is most essential to guard, and, if possible, to improve the quality of the seed. Its excellence is in proportion to the quantity ripened on a plant; the average plant will not produce more than six pods of high-grade seeds, and the number should be reduced to three or four where the plants have been cross-fertilized. More seeds than this will certainly result in plants of inferior type, as has been proved by careful experiments.

By judicious treatment Cyclamen may be had in flower during seven months of the year, from the 1st of October until the early part of May. The long, stiff stalks of the flowers make them admirable for cutting, and their duration is remarkable. Specimens that have been fully developed in the greenhouse do as well in the dry atmosphere of rooms as any plant I know of, and they are serviceable favorites in window-gardening. That this plant can be successfully cultivated without the aid of a greenhouse is amply demonstrated in an instance

recently given in the *Gardeners' Magazine* by a well-known correspondent. The writer says that early in 1892 he saw a fine specimen of the Persian Cyclamen in full bloom that had been grown in a cottage-window for the past nineteen years. It had at that time nearly one hundred and sixty flowers upon it, and was in robust condition. This particular corm was two years old when it came into the hands of the present owner, so that it must be now nearly twenty-two years old. The blossoms are delightfully fragrant, and they seed freely, as some of the progeny is in cultivation at the present time.

Cambridge, Mass. *M. Barker.*

## Spring Cultivation of Chrysanthemums.

CHRYSANTHEMUMS intended for specimen plants or cut flowers during the coming season need cultural attention now and will continue to require it. From new varieties, delivered by the dealers in March, it is possible, with proper management, to secure two or three good plants for exhibition flowers and still have the stock plant left in good form. For this purpose only the soft tips are taken, thus ensuring the break immediately below. If specimen flowers only are wanted the tips may be cut into the hard wood, when, instead of breaking along the stem, suckers will be developed from the base, and these make the very best cuttings. After this treatment the original plant is of little use for making a specimen.

The standard varieties on hand may be established in five or six inch pots. If not already done, this should be attended to at once. A moderately rich compost should be used at this stage, pressed firmly if the soil is light and loosely if it is heavy. It is very important at all stages that the drainage be free.

The plants should be placed in cold frames as soon as this is safe, to encourage a good stocky growth, and the final shift be made into ten or twelve inch pots about the 20th of May in this latitude. My plan has been to turn the plants then into the frame for a week or longer, that they may have the protection of sashes in case of heavy rain before new roots are made.

Stopping is an important operation to secure good symmetrical plants. The plants should be examined for this purpose every few days throughout the season. Untrained plants become leggy, and stopping is also an important factor in retaining the lower foliage, without which no specimen is perfect.

Wellesley, Mass. *T. D. H.*

# Correspondence.

## Hybrid Genera.

To the Editor of Garden and Forest:

Sir,—I see in your number for January 18th that my friend, Mr. Watson, following the precedent of no less an authority than Dean Herbert, raises objections to so-called bigeneric hybrids. By implication, at least, he casts some amount of disapprobation on me for having conferred a name or names, the construction of which must, if he is right in his contention, be altogether faulty and misleading.

I believe in certain quarters I am credited with having been the first to apply a hybrid name to the product of two assumed genera. It may be so, but I have a vague impression, which I have not yet been able to confirm, that I was not the first person to follow such a course, and that there were bigeneric hybrids—named as such—previous to my Philageria x. Be this as it may, I do not wish to shirk my responsibility. If similar circumstances were to arise to-morrow I think I should follow the same course. The reason will be obvious when I have concluded.

Mr. Watson, I am sure, would disclaim the ability to define accurately what is a genus, or what is a species. I should be equally unwilling to advance any claim to infallibility. Both he and I, for our respective purposes, are obliged to adopt certain more or less arbitrary postulates and to say this is a species, or that is a genus. What we include within these limits is partly an affair of judgment and experience, partly of expediency. Moreover, we take genera and species as we find them described by our predecessors. It is obviously impossible for us to study every genus as a monographer does. The number of species and genera upon which any botanist is entitled, from personal research, to pronounce an authoritative opinion is infinitesimal in proportion to the total number. He is compelled to rely upon the opinion of others.

The same arguments that Mr. Watson uses in the case of genera were once employed in the case of species. Such a thing as a hybrid between two distinct species, it was averred, could not exist. The fact of the existence of a so-called hybrid was taken as evidence that the two parents belonged to one and the same, not to two different species. If any one still prefers to adopt that view, it is not for me to say nay. To enter into any discussion on the matter would occupy much more space than the Editor of Garden and Forest would, if I may judge from my own experience, be able to afford. I would simply record my opinion that, at least for garden purposes, it is expedient to admit the existence of species and of hybrids between them. As a matter of physiology, when I read of the characteristics of natural hybrids being produced artificially, as in many Orchids, and of the counterparts of artificial hybrids being found in a wild state, I think we have stronger grounds than mere expediency to justify our procedure. But this part of the subject I do not wish just now to enter upon; I simply repeat that in gardens we cannot do otherwise than recognize certain forms as hybrids, and this being so it is expedient to give them names indicative of their origin. If this be admitted in the case of species, a fortiori it must be admitted in the case of genera. The plant known as Philageria x is not a Philesia, it is not a Lapageria. What is it? In the case of Urceocharis x the gap is wider still. No gardener would confound Urceolina and Eucharis, and Messrs. Clibrans' plant was neither the one nor the other.

The recent publication of Dr. MacFarlane's paper on the microscopical structure of various hybrids shows that in anatomical construction, as well as in outward appearance, the hybrids are intermediate between their parents. It shows also that the variation in minute structure is greater than we usually see in different species of the same genus. Considering all these circumstances, I remain of opinion that it is desirable, for practical purposes, to give these hybrid productions appropriate names according to their degree of distinctness.

As to the bearing these intermediate forms have on the question of the origin of species and of genera, that is, as I have said, too speculative a matter to be entered upon here. I would merely say that I am, so far as I see, more nearly in accord with Mr. Watson in his speculative than in his practical views.

London. *Maxwell T. Masters.*

## Relation of Yield of Potatoes to Weight of Tuber Planted.

To the Editor of Garden and Forest:

Sir,—For many years there has been much written and said concerning the amount of seed tuber to be planted per hill to secure the best and most productive crop of potatoes. The ordinary custom adopted in many tests was to plant in separate plats seed potatoes of different sizes, or to cut tubers in various ways, and plant given areas with certain forms of cuttings. The weight of the seed was guessed at instead of definitely ascertained. To get more definite information on the weight of the seed planted and the resulting crop, in 1889, at the Tennessee University Experiment Station, I carried on quite an extended experiment; the individual tubers planted were first weighed and a record kept of the growth and harvest of each hill. Prime New York State Early Rose tubers were used and the potatoes were planted whole, and in eight lots, grading from tubers weighing from one to two ounces to from twelve to fourteen ounces.

The following table is of special interest and importance as bearing on the results:

| Weight tubers planted. | Average height plants grew. | Total average weight. | Yield per hill. Number. |
|---|---|---|---|
| 12 to 14 ounces. | 20 inches. | 29.8 ounces. | 19.3 |
| 10 to 12 " | 20 " | 20.9 " | 19.1 |
| 8 to 10 " | 17 " | 26.5 " | 16.7 |
| 6 to 8 " | 17 " | 22.8 " | 16.3 |
| 4 to 6 " | 16½ " | 21.4 " | 15.4 |
| 3 to 4 " | 15½ " | 19.8 " | 14.8 |
| 2 to 3 " | 16½ " | 19.1 " | 11.5 |
| 1 to 2 " | 15 " | 17.4 " | 9.5 |

Other experiments were also conducted, in which it was shown that the larger the seed-piece planted the greater the yield. But it was also demonstrated that the large and whole tubers produced smaller and poorer merchantable potatoes than did halves, quarters or single eyes.

For several years past Dr. J. C. Arthur has been investigating this same problem at the Purdue University Experiment Station, from the standpoint of the physiological structure of the tuber. A very large amount of experimental work has been done, in the field, with weighed seed-pieces or tubers. This involved a study of the entire structure of the tuber, and the relation of the number of eyes to the tuber; the number of stalks compared with number of eyes; number of stalks com-

pared with weight of seed-material planted, and number of stalks per hill compared with the yield.

Comparing the number of stalks with the number of eyes, we find the following to be true: "Increasing the number of eyes from one to two, or two to four, upon pieces of uniform weight only increases the number of stalks in the proportion of 1 to 1.2, but increasing the weight of the pieces from twenty to forty grams, with the number of eyes remaining the same, increases the number of stalks in the proportion of 1 to 1.5, or doubling the weight by increasing it from forty to eighty grams, and at the same time doubling the number of pieces, with the number of eyes, however, remaining the same, increases the number of stalks in the proportion of 1 to 1.6." Further, it is strikingly shown by figures, that when the tubers are of the same variety and weight, the number of shoots does not perceptibly increase with the increase of eyes on the tuber, probably due to the comparatively small amount of nutriment available for each eye. A definite relation is also found to exist between the weight of the tuber and the number of shoots to which it will give rise; the heavier the whole or partial tuber the more shoots it will send out. Evidence also proves that equally good results may be secured by planting according to weight of tuber, and entirely ignoring number of eyes to the piece. Comparing the number of stalks per hill with the yield, it was found that there was a uniform increase in the average number of stalks per hill to correspond with the increased size of the seed-tuber used. With the increase of the number of stalks per hill there is also a practically uniform increase in weight of product.

As a result of his research, Dr. Arthur concludes that the number of eyes per piece is immaterial, but that the weight of the piece of tuber is of much significance. Instead of cutting to one, two or three eye-pieces, the approximation should be to one, two or three ounce-pieces, or other definite weight.

Purdue University Agr. Exp. Station. *C. S. Plumb.*

## Recent Publications.

*Johnson's Gardeners' Dictionary.* Revised edition by C. H. Wright and D. Dewar. G. Bell & Sons, London.

The first edition of this work, in one volume, was published in 1847. A second edition appeared in 1856, and a third, with a supplement prepared by Mr. N. E. Brown, was issued in 1882. A new and thoroughly revised edition, much larger than the original, has been carefully prepared by Messrs. C. H. Wright and D. Dewar, both of Kew. It is to be issued in eight monthly parts at one shilling each, the first part appearing on March 1st. Although not so comprehensive nor so abundantly illustrated as the *Dictionary of Gardening*, this new edition of Johnson's book is certain to find considerable favor among gardeners and others who require a handy book for constant reference on all matters of garden interest.

## Exhibitions.

### Mr. Parsons' Pictures of Japan.

A LARGE collection of water-colors, painted last summer in Japan by the English artist, Alfred Parsons, has recently been on exhibition in this city and is now to be shown in Boston. Every one has been eager to see them, for Japan is perennially attractive, and Mr. Parsons' delightful work in black and white, which is as familiar in this country as in England, seemed to promise that his paintings would be conceived in a different spirit from those of any previous traveler of the brush.

This promise has been fulfilled. The ninety-three pictures include a number of landscapes pure and simple, among the most interesting being some of those where the great mountain, Fujisan, fills the background, and certain views of lake-shores with rainy or misty atmospheric effects. But the most characteristic examples may be described as plant-portraits with landscape backgrounds, similar in conception to many of the delightful portrayals of English meadows and woodlands which have been frequent in Mr. Parsons' illustrative work for books and magazines. There is a good deal of variety in the paintings of this class. Sometimes the landscape is more important than the foreground plants, which are not distinctly individualized, but appear in striking masses of uniform or brilliantly varied color. In one example, for instance, we have a whole foreground and middle distance tinted a vivid pink by masses of a plant which the catalogue calls "A Pink Weed," but which the accompanying Japanese name proves to be Dyer's Weed, Polygonum tinctorium—not really a weed therefore, but a crop grown for industrial uses. Again, a real weed, a blue-flowered one resembling in general effect our familiar Pickerel-weed, occupies marshy foregrounds with Rice-fields beyond and distant reaches of water or ranges of hills; and still again we see a Rape-crop in flower, making wide bright yellow stretches across the whole canvas.

In contrast with such pictures as these are others where the plants near at hand are carefully defined and elaborated in leaf, petal and stamen—as in the very characteristic "Lotus Patch at Kawasaki," where a big clump of the huge blue-green leaves and pink blossoms rises from a Rice-field—not accidentally occurring, and not grown for the sake of beauty, but for the sake of the edible roots. Naturally, Mr. Parsons very often shows us the Lotus, but seldom twice in similar situations. Here it occupies half the picture, filling a pond by a temple in Tokio, with a bridge and a part of the temple completing the composition. Then we see it growing rampant in the "Old Moat at Akasi Castle," with groves of Bamboo beyond it; and this is one of the most charming of all the pictures. And, once more, we have a "Study of White Lotus" on a larger scale, in which the very blue leaves of this variety and its great snowy blossoms are explained with especial care and skill.

Almost as numerous as what I may call the Lotus landscapes are those where the chief rôle is played by great masses of Lycoris Japonica. These plants Mr. Parsons calls "Autumn Lilies," but they belong, not to the Lily, but to the Amaryllis, family. Their flowers are not very large, but are borne, many together, on the top of naked stems late in the summer after the leaves have withered; and, being of the brightest scarlet, they are extremely effective in the mass as well as very charming in form when individually examined. Mr. Parsons shows us in what varied situations they may grow—now encircling a little graveyard huddled full of gray head-stones, on an apparently dry site; now edging a cultivated field, just under the edge of the slightly raised road, bordered by plantations of Pine-trees, which is such a characteristic feature in Japan; and now (in one of the most charming of all the pictures) forming irregular clumps amid tall grass near an evergreen grove beyond which lies a placid bit of water. I am not aware that this scarlet Lycoris has yet been cultivated in our country; but Mr. Parsons' revelation of its beauty ought at once to bring it into high favor.

Japanese Lilies of many kinds we already know and value; and, consequently, it is interesting to see how the Japanese behold them. On the shore of Lake Chusenji Mr. Parsons shows us orange-colored ones growing wild and grouped with tall bushes of white Rosa multiflora; on a moor near Nikko, white ones (L. auratum) mingle effectively with the tall flowering-stems of Bocconia Japonica; in a Bamboo-grove at Tennenji (the multitudinous details of which Mr. Parsons has most delightfully worked out) grows Rosa multiflora again with Lilium Krameri; and in the picture called "A Field of Lilies" we have L. auratum once more, but grown as a crop. The bulbs of this plant are in such demand for exportation that fields much more extensive than Mr. Parsons has printed are devoted to its cultivation; and I remember a photograph in which wide masses of it covered the ground between the small tree-trunks in a young fruit-orchard.

Of fruit-trees in blossom Mr. Parsons naturally shows us many examples—Plums, Cherries and Peaches in all shades of white and pink and red. But Azaleas are perhaps more profusely explained to us than any other plant, and it is hard to say where we admire them most—in foregrounds beyond which show stretches of sea-shore or lake-shore, in temple gardens, or on hill-sides where small stone Buddhas stand amid their gay masses.

Of course, these are not all the flowers of Japan which our artist celebrates, but I have space to speak only of one or two more pictures which especially appealed to me. Among these is the "Sacred Palm-tree, Ryugeji," a faithful portrait of what is supposed to be the oldest Cycad in Japan, with a huge short trunk and a spreading head, supported, in its old age, by many props; the large "Edge of Kasuga Park, Nara," interesting by its contrast with the more wholly naturalistic scenes; the studies of purple Wistaria clambering over trees in this park just as it does in our own Central Park; the "Peonies by the Temple Steps, Hasodera," which is especially brilliant in color; the "Single Camellia, Corner of Hotel Garden, Hara," which seemed to me the most perfect bit of color in the whole collection; the "Iris Pond near Osaka," filled with masses of Iris lævigata or Kæmpferi; and the "Foot of Nantaizan," where we see, growing in wild profusion, Irises of another and a smaller sort.

It should be added, in conclusion, that Mr. Parsons' pictures are unfortunately framed. They are enclosed with-

out margins or mats, in gold borders which are much too heavy for such delicate pieces of handiwork, and, impelling the eye to contrast them with the works in oil for which such frames are appropriate, do injustice to the skill with which Mr. Parsons has used his aquarelles. All the examples would look better, and some of them would look much better, had they been mounted in a more appropriate fashion. And, moreover, I think they would appear most entirely successful —alike in color and in handling—if, instead of being seen as they hang on an exhibition wall, they could be drawn one by one from a portfolio for separate and close inspection.

New York. *M. G. Van Rensselaer.*

## Notes.

In rural England the blossoming twigs of Willow, which our children call "Pussy-Willows," are often used in churches on Palm-Sunday, as the only available branches which have yet begun to show proofs of returning life.

In Germany 200,000 families are supported from the care of the forests, upon which about $40,000,000 are expended annually, 3,000,000 people more finding employment in the various wood industries of the empire. The forest account shows an annual profit of between $5,000,000 and $6,000,000.

The largest vineyard in the world, according to a correspondent of the *Tribune* of this city, belongs to Senator Stanford, of California. It consists of 3,500 acres of bearing vines. A large warehouse and cellar for the wine and brandy are to be completed at once at Port Costa, near the Mare Island Navy Yard, and at the edge of deep water, to facilitate shipping.

A correspondent of *The Journal of Horticulture* says that he has raised seedling potatoes for more than half a century, and has always found those having yellow-colored flesh or skin to be the finest-flavored. In the production of new varieties, too, much attention is usually given to productiveness and showiness, and too little to flavor and nutritive qualities.

The total rainfall in the northern counties of California has been this year twenty-five inches, while the fall throughout the entire state has been more than fifteen inches. The recent excessive rains have checked the planting of fruit-trees and will probably lessen the acreage planted. For this reason Navel Orange-trees are now selling for twenty-five cents each, while they were held firmly last month at seventy-five cents each.

A Horticultural Congress, organized by the Société Nationale d'Horticulture de France, will be held in Paris at the time of the spring horticultural exhibition, from the 24th to the 29th of May. The following subjects will be discussed: The value of chemical manures in the market-garden and in orchard-culture; the production and value of hybrids; the most economical methods of heating greenhouses; the comparative influence upon the vegetation of greenhouse-plants of the heat of the sun and of the atmosphere; the different soils used in horticulture; the comparison between French and foreign horticulture.

The practice of defacing natural scenery with great advertisements is not so prevalent in the United States as it was a generation ago, and public sentiment is steadily growing stronger against it. This practice has recently developed in England to such an extent that lovers of Nature recognize that some definite action must be taken. The Thames valley, the most picturesque mountain spots in Wales and the loveliest corners of Devonshire have been greatly injured by huge advertisements. The well-known architect, Mr. Waterhouse, has proposed that if they cannot actually be prohibited, they should at least be diminished by the imposition of a heavy license-tax.

At a recent meeting of the Agricultural Society, in Paris, Monsieur Maurice de Vilmorin exhibited a blossoming spray of the new Asiatic Rose, Rosa sericea. Its home is in the Himalayan regions of the Chinese provinces Yunnan, Sz-Tschwan and eastern Kanson. Its seeds were sent home two years ago by the French missionary, Father Delavey. The young plants were kept over their first winter in cold frames and now are vigorous shrubs with a singular appearance. A foreign journal describes them as remarkable on account of the yellow flowers, the calyx and corolla of which have only four segments, while our roses have five; and also on account of the peculiar character and size of the thorns, of which there are two kinds. One kind are very numerous, long, thin and sharp, but similar to those on our Roses; the other kind, found at the base of each leaf, are flat, very long, and bent in the middle so that their outline is like that of two bows joining in a blunt point.

We have received a preliminary catalogue of the flora of West Virginia, by Professor C. F. Millspaugh, one of the interesting regions, botanically, in eastern America, and almost a virgin field, as few botanists have ever explored it systematically, although a few partial lists of West Virginia plants have been published in recent years. Professor Millspaugh's catalogue will be of great service, therefore, to students of Virginia botany, and will enable them to aid the author in completing his work, which, he tells us, does not cover "all that unexplored and fascinating region lining the south of the great Kanawha River—a region that, as far as I can learn, the foot of the naturalist has never trod." In the nomenclature, the principle of priority and the double-credit system is adopted.

A remarkable dwarf Cedar, known to be three hundred years old, was sent some time ago to the Chicago Fair by the Emperor of Japan. It seems strange to learn that it was prepared for transportation by being taken from its pot and wrapped in paper; and not at all strange that when it reached Jackson Park it should have been nearly dead. Every effort was used to resuscitate it, but a few days ago it died. Nevertheless, its defunct form will be carefully set in a pot and exhibited in the Horticultural Building. It is described as a remarkable example of the skill of the Japanese in retarding the growth of trees and yet preserving, in miniature, the aspect of an ancient, weather-worn specimen. It is larger than the most interesting of these dwarfs which were shown at the Paris Exhibition, being about three feet in height.

A writer in a recent issue of *American Gardening* describes a cheap and effective tree-guard made by driving three stout stakes in a circle about the tree, equally distant from one another. Fence wire is then stapled to one of the stakes close to the ground and wound around the stakes close enough to prevent animals from getting their heads between the spaces until the top of the stakes is reached. A few staples driven in at intervals hold the wire in place. It is evident that a tree-guard made in this way is better than one made of wood, as it excludes little sun from the tree and does not afford shelter to insects; it protects the trees from workmen that are careless with plow or cultivator, and when the trees are large enough no longer to need protection the stakes can be drawn out, the wire unwound and used elsewhere.

On the African as well as on the European coast of the western part of the Mediterranean Sea, flowers are largely grown for the purpose of making perfumes. A favorite plant is the Rose Geranium, and one farm has been described where the plantations of it cover seventy acres. This area is divided into four parts, which are occupied, respectively, by plants one, two, three and four years old. Those which have attained the age of four years are gathered wholesale for the distillery, the ground they leave bare being immediately reset with slips. The collected plants, which average fully two feet in height, are carried by cart-loads to the distillery, where, in great copper vats, they are subjected to the action of steam. This extracts their oil, and, in a cooler connected by pipes with the vat, the oil gradually separates from the water which condenses from the steam, and is then ready to be bottled for the market. The copper vats are then raised and placed on tram-cars, which are run out into the fields, where their contents are emptied on the soil to fertilize it. Sweet Alyssum is one of the weeds which most seriously trouble the cultivators of these Geranium-fields.

Cuba is now furnishing string beans at twenty cents a quart, peppers at thirty cents a dozen, okra at forty cents a hundred, and for twenty-five cents a dozen small egg-plant fruits, some four inches long and two inches in diameter. Florida is sending to our markets lettuce, cabbage, tomatoes, squashes and beets. New Florida potatoes are said to be superior to those from either Cuba or the Bermudas, and sell at from sixty to eighty cents a peck. They are grown on newly cleared land as a preparatory crop for pineapples and bananas, and are of especially fine flavor, and cook dry. Long Island mushrooms bring from fifty cents to a dollar a pound, according to quality, and rhubarb is ten cents a bunch. The northern hot-house lettuce is the best in the market, crisp and white, and sells for fifty cents a dozen. Other northern hot-house products are carrots at fifty cents a dozen, radishes at five cents a bunch, large egg-plants from twenty to fifty cents each, and dandelion at fifteen cents a quart. Boston cucumbers are twenty-five cents each. A large flesh-colored squash from the Sandwich Islands, resembling the Boston Marrow, is selling for fifteen and twenty-five cents. Shallots sell readily to French buyers at thirty cents a dozen.